

REMARKS

The Office Action of December 21, 2009, and the references cited therein have been carefully considered.

In this Amendment, independent claim 14 has been amended to even more clearly define the invention. More specifically, in view of the Examiner's comments, independent claim 14 has been amended to change "sealed end" to closed end when describing the expandable elongate member of the first frictional anchor, and to recite structure whereby the first and second anchoring actions are independent of one another. Claims 4, 5, 7, 8, 10, and 14-18 are currently pending.

Reconsideration of the rejection of claims 4, 5, 7, 8, 10 and 14-18 under 35 U.S.C. §103(a) as being unpatentable over the Japanese patent document '199 in view of the patent to Kovacs is respectfully requested.

The present invention is directed to a combined rock bolt including both a friction-type inflatable rock bolt and a mechanical expansion-type rock bolt in order to overcome the problems inherent in each of the two types of rock bolts as discussed in the present application. According to the present invention as defined in independent claim 14, the rock bolt according to the invention includes a friction-type rock bolt, including a radially expandable, inflatable, elongate tubular member (18) having a closed end (32) and a mechanical expansion type unit or anchor (16), e.g., a wedge-type anchor, that are physically displaced from one another so that, during use, the expandable, inflatable, elongate tubular member (18) is disposed adjacent the mouth of the drill hole in frictional engagement with the surface of the drill hole, while the mechanically expandable unit (16) is disposed in anchoring relationship with the wall of the drill hole at a distance from the drill hole opening corresponding to the entire length of the rock bolt. In order to operate the mechanically expandable unit (16), means, including a further elongate member (12) having a first end secured to the closed end of the tubular member (18) and a second end connected to the mechanical expansion anchor unit (16) to operate same, is provided. With this structural arrangement between the two anchoring mechanisms, the mechanical expansion anchor unit (16) can be operated substantially independently

of the operation of the friction type expandable, inflatable, elongate tubular member (18). That is, the first and second anchoring actions provided by the inflatable friction anchor (18) and the expandable mechanical anchor (16) are independent of one another and can be selectively engaged. In particular, the second anchoring action by the mechanical expansion unit can be achieved simply by pulling and twisting on the end of the rock bolt that protrudes from the bore hole as described in paragraph 30 of the present application, without expanding the sleeve (18) to engage the first anchoring action. Thereafter, water pressure may be used to expand the sleeve (18), and during this anchoring action, the mechanical expansion unit provides a degree of support. It is submitted that there is no teaching or suggestion in either the Japanese reference "199 or the Kovacs patent of providing a single rock bolt with two different type anchoring mechanisms, or even two similar type anchoring mechanisms, which are independently operable to provide independent anchoring actions as required by claim 14, and consequently the claims dependent thereon.

In rejecting the claims over the combination of the Japanese and Kovacs references, the Examiner has taken the position that the Japanese reference teaches all of the claimed and argued features other than the mechanical expansion anchor and the independent operation of the two friction type anchoring actions; that Kovacs teaches a dual mechanical expansion anchor of the type used in the present invention; that no structure is recited in the claims regarding the independent actuation of the two anchoring actions, i.e., only intended use is recited in the claims; and that consequently, it would be obvious to substitute one of the dual mechanical anchors as taught by Kovacs for one of the anchors of the Japanese reference and arrive at the invention defined in the present claims. It is initially submitted, however, that there is no reason or suggestion provided in either of these references of combining same in the manner suggested by the Examiner, i.e., combining anchors of different types in a single rock bolt, whereby the problems presented by the individual type anchoring devices are overcome. Moreover, even if the teachings of the two references were combined the result would not be the invention defined in independent claim 14 as now amended or in

any of the claims dependent thereon since there is no suggestion in either of these references that structure should be provided to permit independent activation of the two different types of anchoring devices.

The Japanese reference '199 discloses a rock bolt having a plurality of inflatable radially expandable anchoring sections (2), with the adjacent sections (2) being connected together via tubular sections or pipes (5) or couplings (3). In the Fig. 4 embodiment referenced by the Examiner, an inflatable section (2) is provided at one end of the rock bolt, and connected via the pipe (5) to a further inflatable section (2). In the arrangement of Fig. 4, the right-hand end of the section (2) adjacent the mouth of the drill hole and connected to the pipe section (5) is not closed as required by claim 14 and the inflatable sections (2) are all activated simultaneously. Thus no independent anchoring by the plurality of spaced anchoring sections, as likewise required by claim 14, is provided or possible. Moreover, as recognized by the Examiner, the inflatable anchor (2) of the Japanese reference is not a mechanical expansion anchor, as required by claim 14. Accordingly, for the above stated reasons it is submitted that claim 14, and consequently claims 4, 5, 7, 8, and 14-17 dependent thereon, are allowable over the Japanese reference '199.

In order to attempt to overcome the deficiencies of the Japanese reference '199, the Examiner has cited the Kovacs reference, which discloses a rock bolt with two mechanical expansion anchors on a single bolt. However, like the Japanese reference '199, Kovacs discloses a rock bolt having two similar anchoring mechanisms which are simultaneously activated, and independent activation is not possible or in any way suggested. Thus there is no teaching or suggestion in either of the two references, or any thing which would make it obvious, to provide a rock bolt with two anchoring mechanisms which are displaced from one another and joined by a "means" whereby the anchors can be set independently of one another as required by the structure recited in independent claim 14 in order to achieve a two-phase anchoring action. Note that no such "means" as recited in claim 14 is suggested in either of the references and is not inherent in simply combining two different type anchors in a single rock bolt. Moreover,

there is no teaching in either of the references of which anchor (2) of the Japanese reference should be replaced by a mechanical anchor of the type taught by Kovacs-note that the claim specifically requires that the inflatable anchor be adjacent the mouth of the drill hole. Contrary to the statement of the Examiner in the Office Action, it is no more obvious to have the distal anchoring device of the Japanese reference replaced by the mechanical anchoring device of Kovacs than vice versa since one can simply supply fluid to an expandable anchor at the distal end by making the bolt extending through the mechanical anchor hollow. Finally, it is pointed out that if the right-hand anchor (2) of the Japanese reference were replaced by a mechanical anchor of the type disclosed by Kovacs, then it would be necessary to substantially modify the hollow pipe (5) connecting the left-hand anchor (2) and the Kovacs type mechanical anchor, both to permit activation of the mechanical anchor and to seal the end of the inflatable anchor (2) to prevent escape of the pressurizing fluid. Thus, in the stated combination, the substitution suggested by the Examiner is not a simple straight forward substitution. Rather, the Examiner's statements concerning the obviousness of suggested feature combinations appear to be based on hindsight in light of applicant's disclosure in an attempt to arrive at applicant's claimed invention. Accordingly for the above stated reasons it is submitted that claim 14, and all of the claims dependent thereon are allowable over the combination the Japanese '199 and Kovacs references.

In view of the above amendments and for the above-stated reasons, it is submitted that all of the pending claims, i.e., claims 4, 5, 7, 8, 10 and 14-18, are allowable over the prior art of record, and are in condition for allowance. Such action and the passage of this application to issue are, therefore, respectfully requested.

If the Examiner is of the opinion that the prosecution of the application would be advanced by a personal interview, the Examiner is invited to telephone undersigned counsel to arrange for such an interview.

To the extent necessary during prosecution, Applicant hereby requests any required extension of time not otherwise requested and hereby authorizes the Commissioner to charge any required fees not intentionally omitted, including

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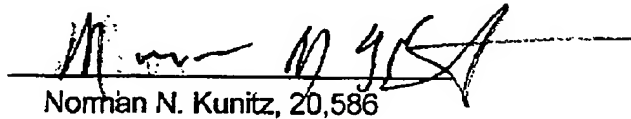
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application processing, extension, extra claims fees, statutory disclaimer, issue, and publication fees, to Deposit Account No. 06-1135 with respect to Order No. 7984-88126.

Respectfully submitted,

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